

ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER
AND KT ENGINEERING CORPORATION
UNDER SPACE ACT UMBRELLA AGREEMENT
NO. SAA8-2031673, DATED 02/05/2020 SAA8-2031673.2

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of providing technical support to KT Engineering in modifying, testing, and using MC-1 turbopumps to successfully accomplish the technical objectives of the Air Force Aerospike Integration and Suborbital Experiment (ARISE) program. The proposed Reimbursable Space Act Agreement will serve as the mechanism by which NASA MSFC subject matter experts will provide technical support to KT Engineering regarding 1) MC-1 pump design, analysis, manufacture, and test and 2) aerospike nozzle design and performance. Transfer of residual MC-1 hardware, tooling, and test support equipment will be accomplished directly between NASA and the Air Force under a separate agreement. The Air Force will provide these assets to the Invocon team as Government Furnished Property.

The legal authority for this Annex, consistent with the Umbrella Agreement, is in accordance with the National Aeronautics and Space Act (51 U.S.C. § 20113(e)).

ARTICLE 2. RESPONSIBILITIES

A. NASA MSFC will use reasonable efforts to:

1. Assist KT Engineering with developing an engine math model using ROcket Engine Transient Simulation (ROCETS) software.
2. Provide a completed ROCETS engine software model to KT Engineering.
3. Provide ROCETS expertise and guidance in the use of the model, including troubleshooting and analyzing model results at the request of KT Engineering.
4. Support KT Engineering as needed with hardware reviews, design reviews, test planning and execution support, and data review and analysis.
5. Provide engineering and technical support to KT Engineering as needed during all phases of FASTRAC engine assembly, teardown and modification.
6. Provide KT Engineering with available CAD (Pro-E) files and/or paper drawings of FASTRAC components as needed by KT Engineering.

B. Partner will use reasonable efforts to:

1. Provide design and related information regarding the use of the FASTRAC hardware to NASA MSFC for software development and document reviews.

2. Interface with ER12, ER13, ER15, and ER41 personnel on an as-needed basis. This includes telecons, face-to-face meetings, and reviews and briefings.

ARTICLE 3. SCHEDULE AND MILESTONES

The planned major milestones for the activities for this Annex defined in the "Responsibilities" Article are as follows:

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| 1. KT Engineering provides design and related information regarding the use of hardware to NASA MSFC for software development and document reviews | 2 weeks after Effective Date |
| 2. NASA MSFC provides a completed ROCETS engine software model to KT Engineering | 120 days after Effective Date |
| 3. NASA MSFC delivers CAD (Pro-E) files of FASTRAC turbomachinery and combustion devices | 6 weeks after Effective Date |
| 4. NASA MSFC provides oversight support to KT Engineering for all reviews and analyses related to FASTRAC hardware. | As requested |

ARTICLE 4. FINANCIAL OBLIGATIONS

A. Partner agrees to reimburse NASA an estimated cost of \$352,878.00 for NASA to carry out its responsibilities under this Annex. Upon execution of this agreement, an initial payment of \$151,767.00 will be provided by the Partner before NASA will provide services. A second payment, totaling \$94,105.00, will be provided by the Partner by October 1, 2020. A third payment, totaling \$107,006.00, will be provided by the Partner by October 1, 2021.

Each payment shall be marked with NASA MSFC SAA8-2031673.2.

B. NASA will not provide services or incur costs beyond the current funding. Although NASA has made a good faith effort to accurately estimate its costs, it is understood that NASA provides no assurance that the proposed effort under this Annex will be accomplished for the estimated amount. Should the effort cost more than the estimate, Partner will be advised by NASA as soon as possible. Partner shall pay all costs incurred and have the option of canceling the remaining effort, or providing additional funding in order to continue the proposed effort under the revised estimate. Should this Annex be terminated, or the effort completed at a cost less than the agreed-to estimated cost, NASA shall account for any unspent funds within one year after completion of all effort under this Annex, and promptly thereafter, at Partner's option return any unspent funds to Partner or apply any such unspent funds to other activities under the Umbrella Agreement. Return of unspent funds will be processed via Electronic Funds Transfer (EFT) in accordance with 31 C.F.R. Part 208 and, upon request by NASA, Partner agrees to complete the Automated Clearing House (ACH) Vendor/Miscellaneous Payment Enrollment Form (SF 3881).

ARTICLE 5. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

A. Data produced under this Annex which is subject to paragraph C. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement will be protected for the period of one year.

B. Under paragraph H. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement, Disclosing Party provides the following Data to Receiving Party. The lists below may not be comprehensive, are subject to change, and do not supersede any restrictive notice on the Data provided.

1. Background Data:

None

2. Third Party Proprietary Data:

None

3. Controlled Government Data:

None

4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement:

None

ARTICLE 6. TERM OF ANNEX

This Annex becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or two years from the Effective Date, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

ARTICLE 7. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Annex by providing thirty (30) calendar days written notice to the other Party.

ARTICLE 8. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Annex.

Technical Points of Contact

NASA George C. Marshall Space Flight
Center
Joesph C. Leahy
SUPV AST, LIQUID PROPULSION
SYSTEMS

KT Engineering Corporation
David Sisk
President
101 Quality Circle
Suite 120

Mail Suite: ER15
Marshall Space Flight Center, AL 35812
Phone: 256-544-9202
joe.leahy@nasa.gov

Huntsville, AL 35806-4534
Phone: 256-348-2668
dave.sisk@kte-aerospace.com

ARTICLE 9. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Modification of an Annex does not modify the terms of the Umbrella Agreement.


ARTICLE 10. SIGNATORY AUTHORITY

The signatories to this Annex covenant and warrant that they have authority to execute this Annex. By signing below, the undersigned agrees to the above terms and conditions.

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE
FLIGHT CENTER

KT ENGINEERING CORPORATION

BY: _____
Joe L. Leopard
Director Engineering Directorate

BY:  _____
David Sisk
President

DATE: _____

DATE: 3/24/20